

Trip Report
Chiapas, Mexico
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I traveled to Chiapas, Mexico to work on cooperative project between the USDA FS, the Texas Forest Service, and ECOSUR. This trip was funded by the International Activities team of Forest Health protection, USDA Forest Service. My visit was hosted by Jorge Macías-Sámano of ECOSUR. The purpose of the project is to investigate a putative new species of *Dendroctonus* bark beetle which occurs in Mexico and Central America. Though it has not been described officially as a new species of *Dendroctonus* in scientific publications to date, I will refer to it as such throughout the report. Another objective is to determine which species are responsible for initiating attacks and killing pines in these regions.

I flew into Tuxtla-Gutiérrez and was transported by van to the city of Comitán, where I spent my nights. This city is about 1 hour from Lagos de Montebello National Park, the site of ECOSUR's field studies on *Dendroctonus*. Infestations of the new species and the southern pine beetle (SPB), *D. frontalis*, have been observed in the Park. The two primary species of pines in the Park are *Pinus oocarpa* and *P. maximinoi*. During my visit we worked on three the separate studies. Park personnel were very accommodating and assisted greatly with these studies.

Pheromone identification for the new species. The new species of *Dendroctonus* is not attracted the frontalin, a primary aggregation pheromone of SPB. Brian Sullivan, a SRS research entomologist in Pineville, LA, has identified a potential attractant pheromone for the new species: endo-brevicomin. We designed a study to test this potential pheromone. The five treatments tested are: 1. turpentine only; 2. turpentine plus frontalin (the standard SPB lure); 3. turpentine plus frontalin on the trap plus endo-brevicomin placed 4m from the trap (a new SPB trapping scheme); 4. turpentine plus endo-brevicomin on the trap (potential lure for the new species); and 5. turpentine plus frontalin plus endo-brevicomin on the trap. Funnel traps were used, with each trap at least 100m from any other trap. There were three replicates per treatment. As all traps

were placed in one area of the park, we could not group them into separate blocks, so the treatments were randomized across all 15 traps. Alicia Nino, a graduate student, has responsibility for this experiment. Collections will be made every two weeks, with treatments re-randomized following each collection. Alicia will identify all bark beetles collected.

Orientation study. A study was established to test whether the new species attacks vertical targets, horizontal targets, or both. An uninfested pine was felled and bucked into six 1m bolts. Three bolts were placed upright near an infested pine. The bolts were supported by wire to prevent them from falling over. Another bolt was placed horizontally near each vertical bolt. The horizontal bolts were laid across two boards so that the main portion of the bolt was off the ground. The bolts will be checked periodically until beetles attack and initiate gallery construction. The species of *Dendroctonus* attacking the bolts (if any) will be identified. This experiment is designed to provide insight as to whether the new species is a primary or secondary bark beetle.

Predator study. Bernardo, another graduate student of Jorge's, has been studying predators of SPB in Chiapas. He has been using baited funnel traps to collect SPB and its predators. He has been collecting very few SPB. Initially he was not using high-releases of turpentine in addition to frontalin in the traps. He began using turpentine after we suggested it was necessary to trap SPB. Upon my arrival, he indicated that the addition of turpentine had not improved trap catch. He showed me samples of trap collections he had made that day, and they contained only 1-2 SPB per trap. His traps had been placed randomly through the park, so I suggested we set up some traps near infested trees. We placed three traps (two with frontalin, alpha-pinene, and turpentine, one with only frontalin and alpha-pinene) on poles near some infested trees. The next day there were 1-3 SPB per trap. Given the amount of mid- and understory in the forests, and the fact that SPB in Central America seem to initiate attacks near the crown, I suggested that we hang a trap from a branch. We suspended a trap baited with turpentine, frontalin, and alpha-pinene from a tree branch ca. 7m off the ground. The next day this trap had collected 50+ SPB, compared to 5 or fewer in the other traps. These results indicate trap height may be important when attracting SPB in Chiapas. We then hung one of the three traps on the ground from another tree branch, but baited it only with frontalin and alpha-

pinene. Bernardo and Alicia will continue to monitor these traps to check if trap height is important. If endo-brevicommin is successful in attracting the new species, we will also test the effects of trap height on their collection.

We also cut down five infested trees and collected bolts and bark for rearing. Alicia will place beetles collected on fresh bolts and allow them to initiate galleries. She will excise these beetles and place them in conical vials provided by Brian to collect volatiles produced by the beetles. She and Brian will determine the identity of the volatiles when he visits in October.

On Friday Jorge and I drove back to Tuxtla-Gutiérrez. We stopped at several sites along the way so I could observe different forest types found in Chiapas. We also went to the cultural city of San Cristóbal de las Casas and visited the town square. I returned to the U.S. the next day.